15-474

Form 3160-3
(August 2007)

Operator Copy
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JUL 11 2013
NMOCD ARTESIA

FORM APPROVED
OMB No. 1004-0136
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM117116

6. If Indian, Allottee or Tribe Name

1a. Type of Work: ☒ DRILL ☐ REENTER

CONFIDENTIAL

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
COTTON HILLS 23 26 27 FED COM 1H

2. Name of Operator
CHESAPEAKE OPERATING, INC.
Contact: CAROL ADLER
E-Mail: carol.adler@chk.com

9. API Well No.
30-015-41535

3a. Address
P.O. BOX 18496
OKLAHOMA CITY, OK 73154-0496

3b. Phone No. (include area code)
Ph: 817-556-5825

10. Field and Pool, or Exploratory
HAY;HOLLOW;BONE SPRING — 97489
Wolfcamp (~~30215~~)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface NWNE Lot B 152FNL 1979FEL (Unit)

At proposed prod. zone SESW Lot O 330FSL 1979FEL (Unit 560)

11. Sec., T., R., M., or Blk. and Survey or Area
Sec 23 T26S R27E Mer NMP

14. Distance in miles and direction from nearest town or post office*
20 MILES FROM MALAGA, NEW MEXICO

12. County or Parish
EDDY

13. State
NM

15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
152 FEET FROM NORTH SECTION LINE

16. No. of Acres in Lease
~~1365.00~~ 1364.69

17. Spacing Unit dedicated to this well
~~160.00~~ 320

18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft.
1430 FEET FROM NEAREST WELL

19. Proposed Depth
~~12144~~ MD 14280'
~~7538~~ TVD 9895
Pilot Hole 10,300 TVD

20. BLM/BIA Bond No. on file
ESB000159

21. Elevations (Show whether DF, KB, RT, GL, etc.
3119 GL

22. Approximate date work will start
05/01/2013

23. Estimated duration
30 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature	Name (Printed/Typed)	Date
(Electronic Submission)	CAROL ADLER Ph: 817-556-5825	04/18/2013

Title
REGULATORY ANALYST II

Approved by (Signature)	Name (Printed/Typed)	Date
/s/ Mac Don	/s/George MacDonell	7/10/13
Title FIELD MANAGER	Office BLM Carlsbad Field Office	

Application approval does not warrant or certify the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Additional Operator Remarks (see next page)

CARLSBAD CONTROLLED WATER BASIN

Electronic Submission #204753 verified by the BLM Well Information System.
For CHESAPEAKE OPERATING, INC., sent to the Carlsbad
Committed to AFMSS for processing by JOHNNY DICKERSON on 04/18/2013 ()

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015-41535	~~30215~~ 97489	WILDCAT; WOLFCAMP (GAS)

4 Property Code	5 Property Name	6 Well Number
40022	Cotton Hills 23 26 27 FED COM	1H

7 OGRID No.	8 Operator Name	9 Elevation
147179	CHESAPEAKE OPERATING, INC.	3119'

10 Surface Location

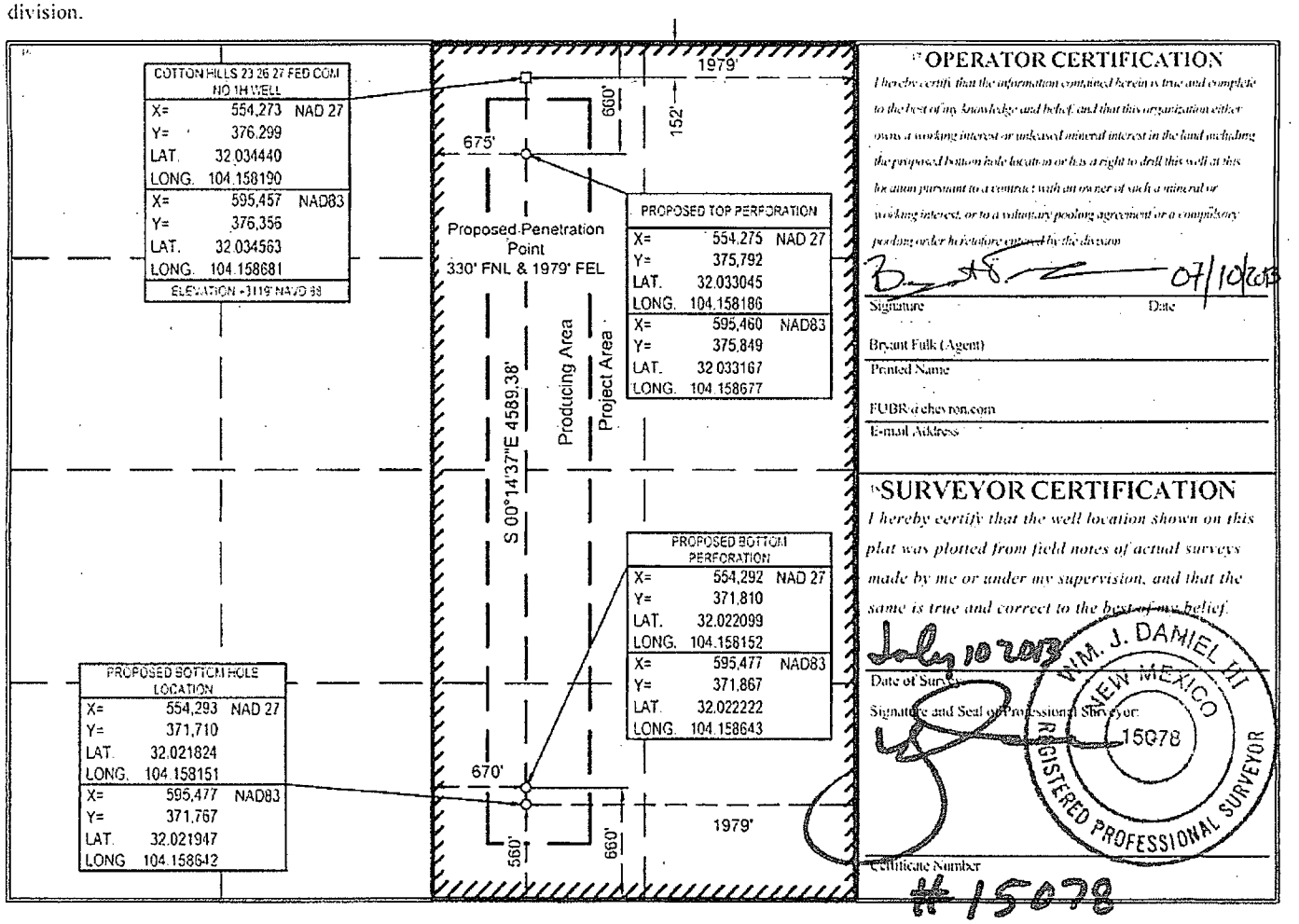
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	23	26 SOUTH	27 EAST, N.M.P.M.		152'	NORTH	1979'	EAST	EDDY

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	23	26 SOUTH	27 EAST, N.M.P.M.		560'	SOUTH	1979'	EAST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
320			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 07/10/2013

Bryant Fulk (Agent)
Printed Name

FUBR@chevron.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

July 10 2013
Date of Survey

Signature and Seal of Professional Surveyor:

WILLIAM J. DANIEL III
NEW MEXICO
15078
REGISTERED PROFESSIONAL SURVEYOR

Certificate Number #15078

ONSHORE ORDER NO. 1
Chesapeake Agent for Chevron
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE
OPERATOR CERTIFICATION

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

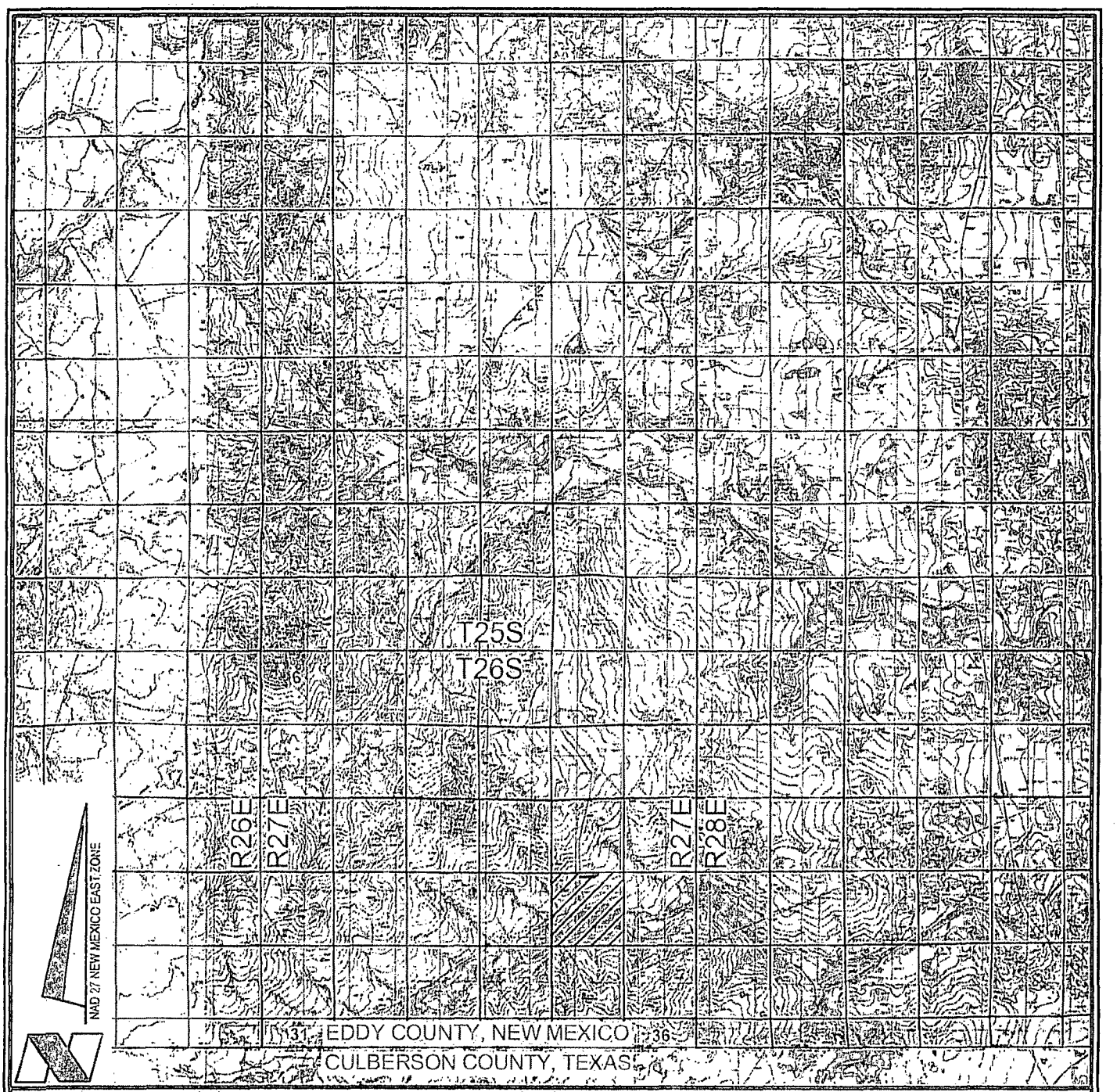
Executed this 25th day of February, 2013

Name: Stephen Tarr
Stephen Tarr - Field Superintendent/Surface Landman

Address: 1616 W Bender Blvd Hobbs, NM 88240

Telephone: 432-238-6316

E-mail: Starr@chevron.com



VICINITY MAP

10,000' 0 5,000' 10,000'

Scale: 1" = 10,000'

CHESAPEAKE OPERATING, INC.

COTTON HILLS 23-26-27 FED COM NO. 1H WELL

LOCATED 152' FNL AND 1979' FEL

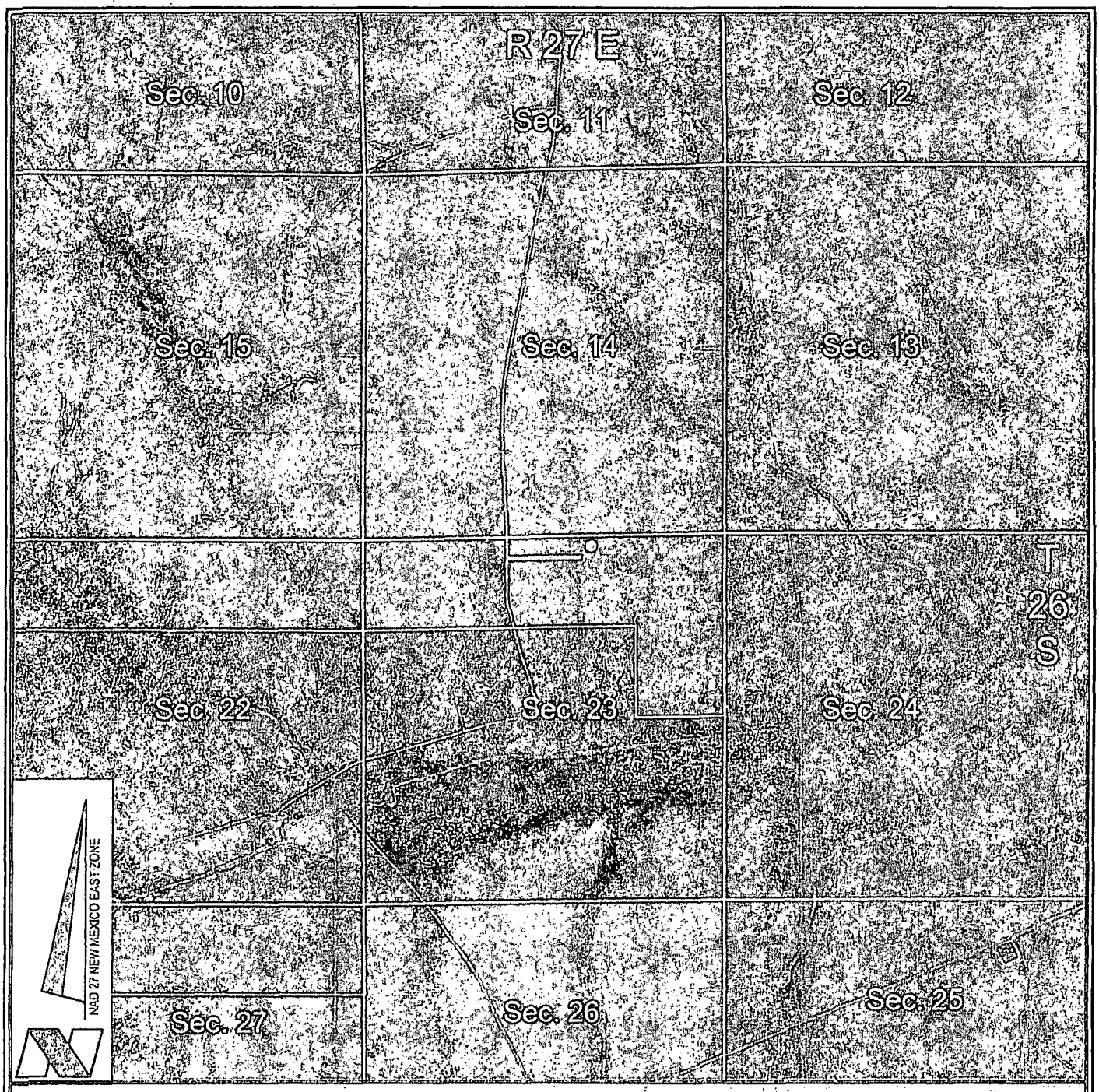
SECTION 23, T26S-R27E

EDDY COUNTY, NEW MEXICO

FENSTERMAKER

Lafayette New Orleans Houston
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

DRAWN BY: BMO	REVISED:	DATE: 02/15/2013
PROJ. MGR.: DBM		SHEET 2 OF 3 SHEETS
FILENAME: T:\2013\2139028\DWG\Cotton Hills 23-26-27 FED COM 1H APD.dwg		



VICINITY MAP

2000' 0 1000' 2000'

Scale: 1" = 2000'

= FEDERAL LAND

= FEE LAND

= STATE LAND

CHESAPEAKE OPERATING, INC.

COTTON HILLS 23-26-27 FED COM NO. 1H WELL

LOCATED 152' FNL AND 1979' FEL

SECTION 23, T26S-R27E

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DRAWN BY: BMO	REVISED:	DATE: 02/15/2013
PROJ. MGR.: DBM		SHEET 3 OF 3 SHEETS
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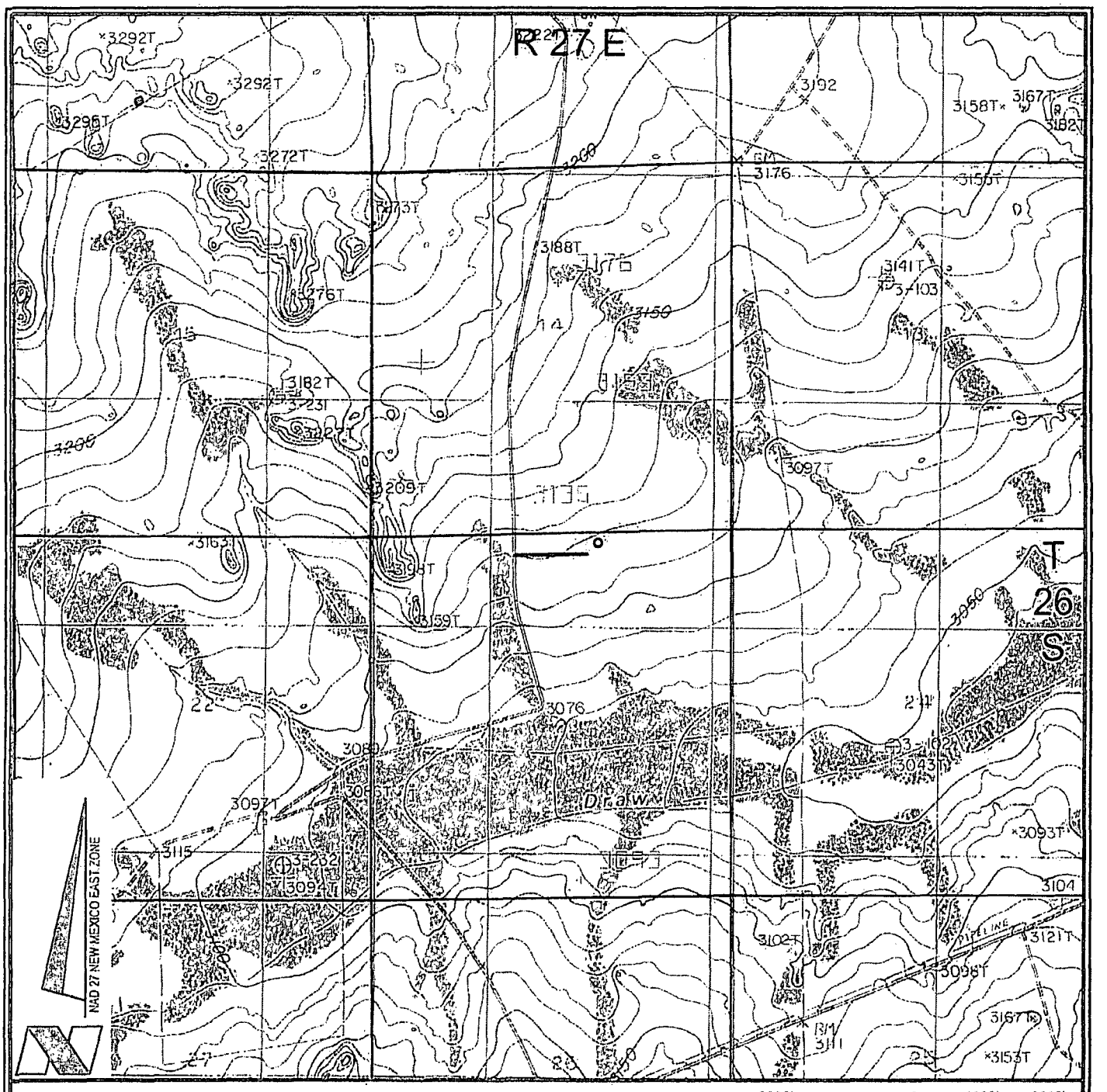

VICINITY MAP

2000' 0 1000' 2000'
Scale: 1" = 2000'

CHESAPEAKE OPERATING, INC.

COTTON HILLS 23-26-27 FED COM NO. 1H WELL

LOCATED 152' FNL AND 1979' FEL

SECTION 23, T26S-R27E

EDDY COUNTY, NEW MEXICO

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DRAWN BY: BMO	REVISED:	DATE: 02/15/2013
PROJ. MGR.: DBM		SHEET 1 OF 3 SHEETS
FILENAME: T:\2013\2139028\DWG\Cotton Hills 23-26-27 FED COM 1H APD.dwg		

COTTON HILLS 23-26-27 FED COM 2H TO 1H FLOWLINE

SURVEY OF A PROPOSED FLOWLINE 1130.20 FEET OR 68.50 RODS IN LENGTH CROSSING STATE OF NEW MEXICO LAND IN SECTION 23 OF TOWNSHIP 26 SOUTH RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 23 TOWNSHIP 26 SOUTH RANGE 27 EAST AT A FOUND 3 INCH CONCRETE MONUMENT WITH BRASS CAP; THENCE SOUTH 82 DEGREES 39 MINUTES 38 SECONDS EAST 2056.51 FEET TO THE POINT OF BEGINNING (P.O.B.), SAID POINT OF BEGINNING (P.O.B.) HAVING THE FOLLOWING COORDINATES: X= 552,981.42 Y= 376,120.73 (NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD 27).

THENCE NORTH 88 DEGREES 49 MINUTES 43 SECONDS EAST 1130.20 FEET TO THE POINT OF ENDING (P.O.E.) HAVING THE FOLLOWING COORDINATES: X= 554,111.38 Y= 376,143.83 (NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD 27).

COTTON HILLS 23-26-27 FED COM 1H-3H FLOWLINE

SURVEY OF A PROPOSED FLOWLINE 1000.34 FEET OR 60.63 RODS IN LENGTH CROSSING STATE OF NEW MEXICO LAND IN SECTION 23 OF TOWNSHIP 26 SOUTH RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 23 TOWNSHIP 26 SOUTH RANGE 27 EAST AT A FOUND 3 INCH CONCRETE MONUMENT WITH BRASS CAP; THENCE SOUTH 79 DEGREES 19 MINUTES 02 SECONDS WEST 1842.36 FEET TO THE POINT OF BEGINNING (P.O.B.), SAID POINT OF BEGINNING (P.O.B.) HAVING THE FOLLOWING COORDINATES: X= 554,441.25 Y= 376,150.67 (NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD 27)

THENCE NORTH 88 DEGREES 49 MINUTES 24 SECONDS EAST 1000.34 FEET TO THE POINT OF ENDING (P.O.E.), SAID POINT OF ENDING (P.O.E.) HAVING THE FOLLOWING COORDINATES: X= 555,441.37 Y= 376,171.21 (NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD 27).

NOTE:
PLEASE BE ADVISED, THAT WHILE REASONABLE EFFORTS ARE MADE TO LOCATE AND VERIFY PIPELINES AND ANOMALIES USING OUR STANDARD PIPELINE LOCATING EQUIPMENT, IT IS IMPOSSIBLE TO BE 100% EFFECTIVE. AS SUCH, WE ADVISE USING CAUTION WHEN PERFORMING WORK AS THERE IS A POSSIBILITY THAT PIPELINES AND OTHER HAZARDS, SUCH AS FIBER OPTIC CABLES, PVC PIPELINES, ETC. MAY EXIST UNDETECTED ON SITE.

MANY STATES MAINTAIN INFORMATION CENTERS THAT ESTABLISH LINES BETWEEN THOSE WHO DIG (EXCAVATORS) AND THOSE WHO OWN AND OPERATE UNDERGROUND FACILITIES (OPERATORS). IT IS ADVISABLE AND IN MOST STATES, LAW, FOR THE CONTRACTOR TO CONTACT THE CENTER FOR ASSISTANCE IN LOCATING AND MARKING UNDERGROUND UTILITIES. NEW MEXICO ONE CALL, www.nmoneocall.org.

DISCLAIMER: AT THIS TIME, FENSTERMAKER & ASSOCIATES, INC. HAS NOT PERFORMED NOR WAS ASKED TO PERFORM ANY TYPE OF ENGINEERING, HYDROLOGICAL MODELING, FLOOD PLAIN, OR 7(d) RISE CERTIFICATION ANALYSES, INCLUDING BUT NOT LIMITED TO DETERMINING WHETHER THE PROJECT WILL IMPACT FLOOD HAZARDS IN CONNECTION WITH FEDERAL EMA, STATE, AND/OR LOCAL LAWS, ORDINANCES AND REGULATIONS. ACCORDINGLY, FENSTERMAKER MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND AS TO THE FOREGOING ISSUES, AND PERSONS OR ENTITIES USING THIS INFORMATION SHALL DO SO AT THEIR OWN RISK.

FOR THE EXCLUSIVE USE OF
CHEVRON U.S.A. INC.

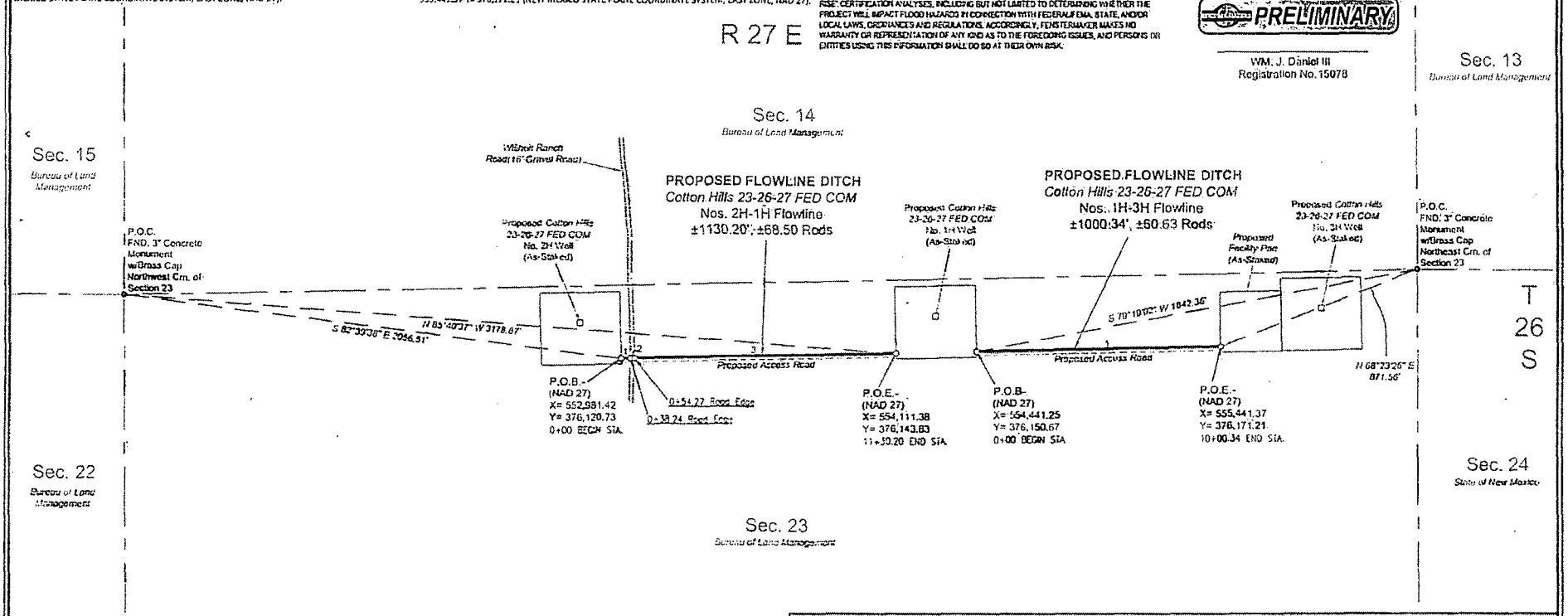
I, WM. J. Daniel III, Registered Professional Land Surveyor, do hereby state this plat is true and correct to the best of my knowledge.

Not to be used for construction, bidding, recordation, conveyance, sales, or as the basis for the issuance of a permit.

PRELIMINARY

WM. J. Daniel III
Registration No. 15078

R 27 E



NAD 27 NEW MEXICO EAST ZONE

LEGEND

⊕	Found Occupation
O	Pt Point
	Section Line
	Reference Line
	Proposed Flowline
	Proposed Access
	Road Edge
Point of Commencement	P.O.C.
Point of Beginning	P.O.B.
Point of Ending	P.O.E.

Scale: 1"=400'

400' 0 200' 400'

CALL TABLE Cotton Hills 23-26-27 FED COM No. 2H to 1H Flowline			CALL TABLE Cotton Hills 23-26-27 FED COM No. 1H to 3H Flowline		
LINE #	BEARING	DISTANCE	LINE #	BEARING	DISTANCE
1	N 88° 49' 43" E	38.24'	1	N 88° 49' 24" E	1000.34'
2	N 88° 49' 43" E	16.03'			
3	N 88° 49' 43" E	1075.93'			

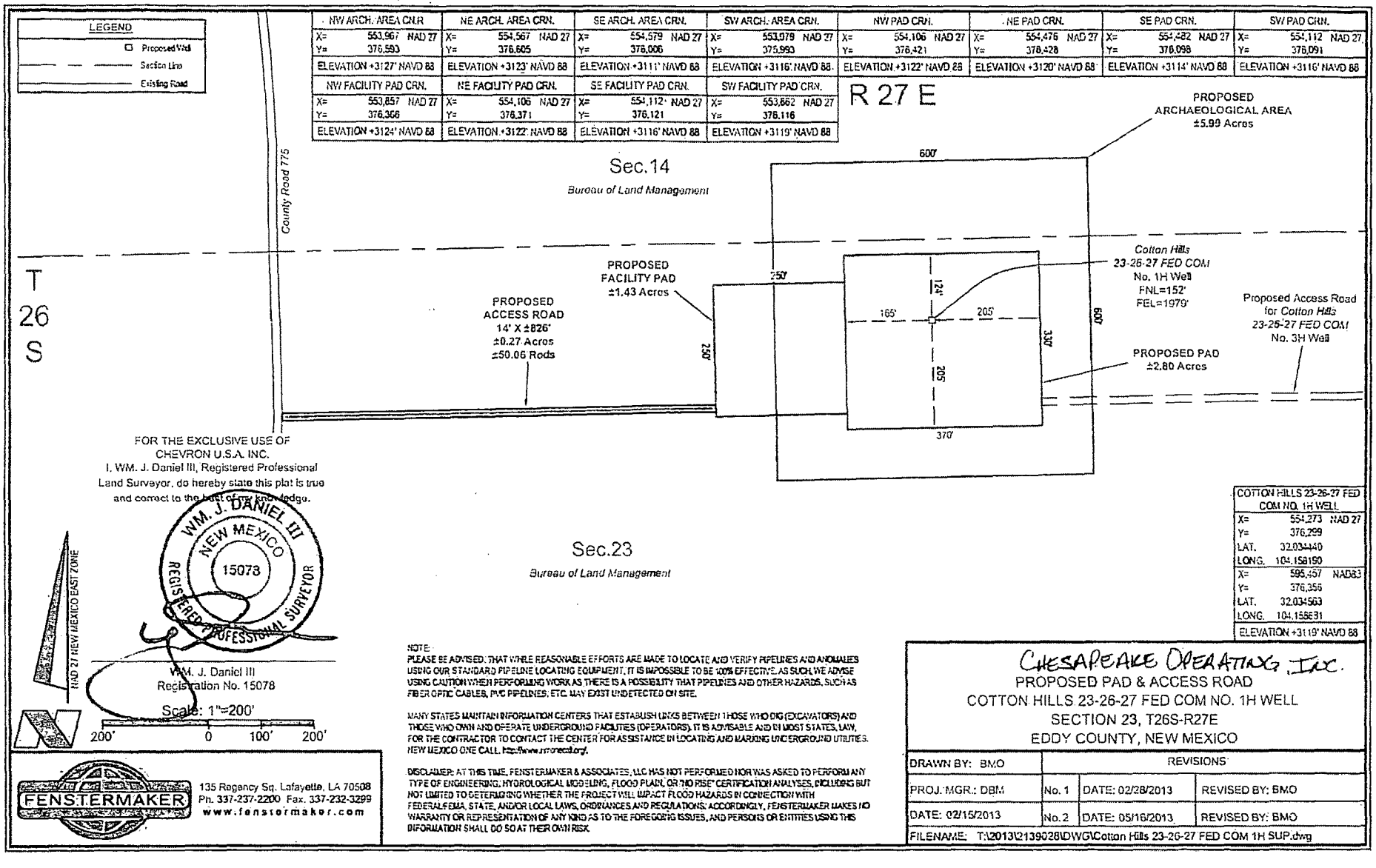
FLOWLINE PLAT

CHESAPEAKE OPERATING, INC.
PROPOSED FLOWLINE DITCH
COTTON HILLS 23 26 27 FED COM NOS. 1H-3H FLOWLINES
SECTION 23, T26S-R27E
EDDY COUNTY, NEW MEXICO

FENSTERMAKER
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax: 337-232-3299
www.fenstermaker.com

DRAWN BY: BMO	REVISIONS		
PROJ. MGR.: DBM	No.	DATE:	REVISED BY:
DATE: 02/19/2013	No.	DATE:	REVISED BY:

FILENAME: T:\2013\2139028\DWG\Cotton Hills 23-26-27 FED COM 1H & 2H Flowlines.dwg



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MANY STATES MAINTAIN INFORMATION CENTERS THAT ESTABLISH LINKS BETWEEN THOSE WHO DIG (EXCAVATORS) AND THOSE WHO OWN AND OPERATE UNDERGROUND FACILITIES (OPERATORS). IT IS ADVISABLE AND IN MOST STATES, LAW, FOR THE CONTRACTOR TO CONTACT THE CENTER FOR ASSISTANCE IN LOCATING AND MARKING UNDERGROUND UTILITIES. NEW MEXICO ONE CALL, http://www.nmprecall.org/.

DISCLAIMER: AT THIS TIME, FENSTERMAKER & ASSOCIATES, LLC HAS NOT PERFORMED NOR WAS ASKED TO PERFORM ANY TYPE OF ENGINEERING, HYDROLOGICAL MODELING, FLOOD PLAIN, OR "NO RISE" CERTIFICATION ANALYSES, INCLUDING BUT NOT LIMITED TO DETERMINING WHETHER THE PROJECT WILL IMPACT FLOOD HAZARDS IN CONNECTION WITH FEDERAL/FEMA, STATE, AND/OR LOCAL LAWS, ORDINANCES AND REGULATIONS. ACCORDINGLY, FENSTERMAKER MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND AS TO THE FOREGOING ISSUES, AND PERSONS OR ENTITIES USING THIS INFORMATION SHALL DO SO AT THEIR OWN RISK.

FENSTERMAKER
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

CHESAPEAKE OPERATING, INC.
PROPOSED PAD & ACCESS ROAD
COTTON HILLS 23-26-27 FED COM NO. 1H WELL
SECTION 23, T26S-R27E
EDDY COUNTY, NEW MEXICO

DRAWN BY: BMO	REVISIONS		
PROJ. MGR.: DBM	No. 1	DATE: 02/28/2013	REVISED BY: BMO
DATE: 02/15/2013	No. 2	DATE: 05/16/2013	REVISED BY: BMO
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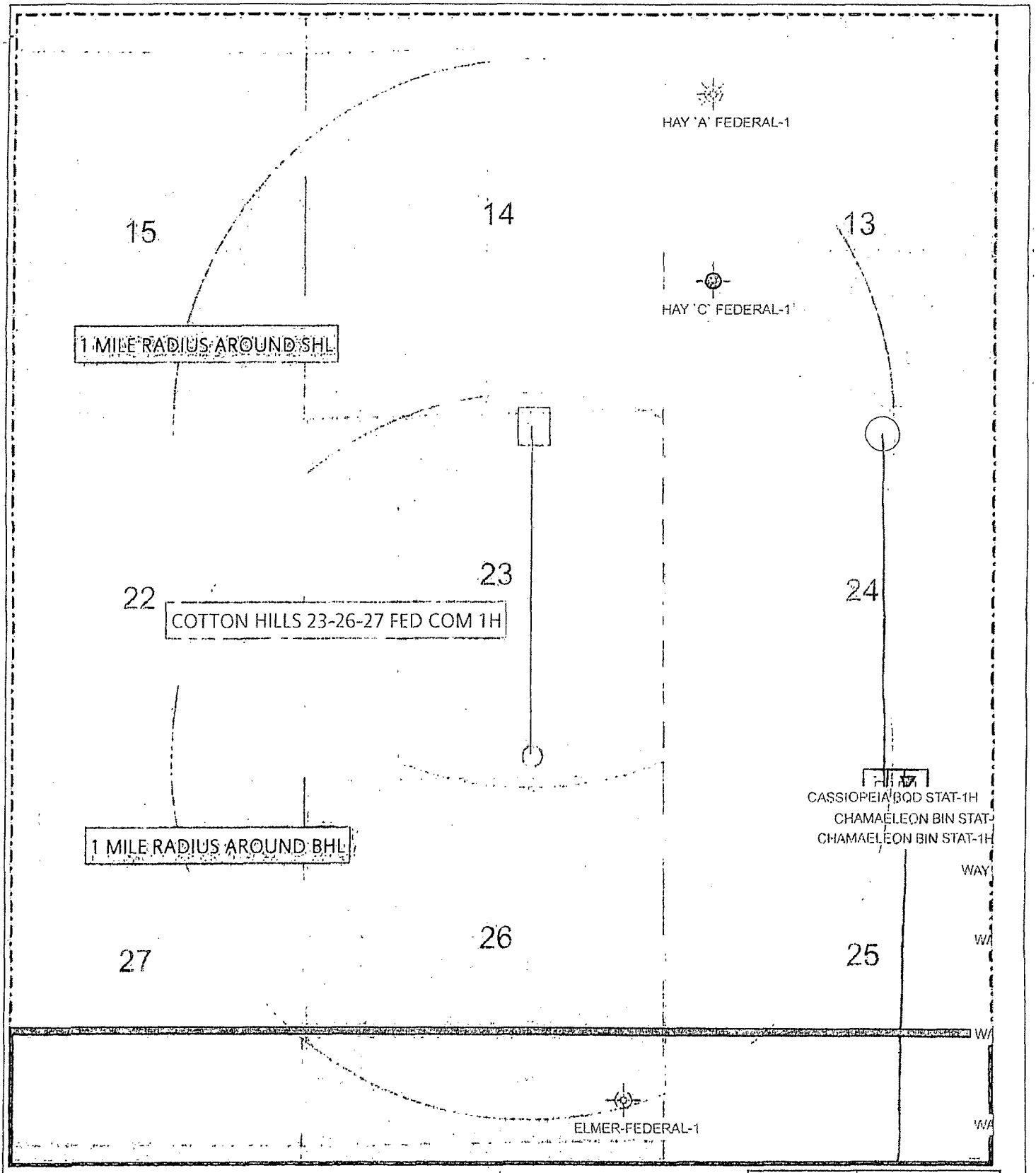


CHESAPEAKE OPERATING, INC.

PERMIAN DISTRICT
COTTON HILLS 23-26-27 FED,COM 1H
EDDY COUNTY, NM
23-26S-27E
COTTON HILLS 23-26-27 FED COM 1H_1 Mile Radius.grd
Date: 8 March, 2013 MAP BY: SARAH LYNCH

Chesapeake Operating, Inc. respectfully requests permission to drill a well to 12,144'. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and New Mexico Oil Conservation Division requirements.

Please find the Surface Use Plan and Drilling Plan as required by Onshore Order No. 1.

Attached are the Exhibit A-1 to A-4 Survey plats, Exhibit B 1 mile radius plat, Exhibit C Production facility, Exhibit D Trinidad Rig layout, Exhibit F-1 to F-2 BOP & Choke Manifold, Exhibit G Standard Planning Report, Wellbore Schematic and Form C-144 Closed Loop System Permit.

Archeological Survey will be delivered to the BLM when completed.

Chesapeake Operating, Inc. has an agreement with the grazing lessee.

Please be advised that Chesapeake Operating, Inc. is the Designated Agent for Chevron. Chesapeake Operating, Inc. agrees to be responsible under the terms and conditions of the lease for the operations conducted upon the lease lands.

OHSORE OIL & GAS ODER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

All lease and/or unit operations are to be conducted in such a manner that full compliance is made with the applicable laws, regulations (CFR 43, Part 3160) and the approved Application for Permit to Drill. The operator is considered fully responsible for the actions of his subcontractors. A copy of the approved APD must be on location during construction, drilling and completion operations.

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.

1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA	KBTVD	MD
Rustler	3020	116	
Top of Salt	2725	411	
Base of Salt	1100	2036	
Lamar	985	2151	
Bell Canyon	935	2201	
Cherry Canyon	90	3046	
Brushy Canyon	-1450	4586	
Bone Spring	-2715	5851	
Wolfcamp	-5795	8931	
Pilot TD	-7164	10300	
Lateral TD	-6815	9951	14280
Pilot Hole Depth changed from 10,150' to 10,300'			

2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Water	Rustler	116
Oil/Gas	Brushy Canyon	4586
Oil/Gas	Bone Spring	5851
Oil/Gas	Wolfcamp	8931

All shows of fresh water and minerals will be reported and protected.

3. BOP EQUIPMENT

Will have a minimum of a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified in the attached testing requirements.

4. **CASING PROGRAM**

a. The proposed casing program will be as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	350'	17-1/2"	13-3/8"	48 #	H-40	STC	New
Shallow Intermediate	0'	2,160'	12-1/4"	9-5/8"	40 #	J-55	LTC	New
Production	0'	10,000'	8-3/4"	7"	26.0 #	C-110	CDC	New
Production Liner	9,418'	14,280'	6-1/8"	4.5"	11.6 #	HCP-110	CDC	New

Note: 7" casing to be set at ~70 degrees in curve section. C-110 casing will be used due to availibility. A 4.5" liner will be landed at the top of the curve section.

b. Casing design subject to revision based on geologic conditions encountered.

c. ***A "Worst Case" casing design for wells in a particular area is used below to calculate the Casing Safety Factors. If for any reason the casing design for a particular well requires setting casing deeper than the following "worst case" design, then the Casing Safety Factors will be recalcuated & sent to the BLM prior to drilling.**

SF Calculations based on the following "Worst Case" casing design.

Surface Casing: 1500'
Intermediate Casging: 4750'
Production Casing/Liner: 15,250' MD/10,500' TVD (5000' VS @ 90 deg inc)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension
Surface	1.28	1.14	1.94
Shallow Intermediate	1.28	1.25	1.99
Production	1.24	1.65	1.76
Production Liner	1.25	1.25	1.99

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
Burst Design			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
Collapse Design			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
Tension Design			
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Top	Bottom	Weight	Yield	%Excess	Sacks
Surface				(ppg)	(sx/cu ft)	Open Hole	
Lead	C + 4% Gel + 2% CaCl	0'	250'	13.5	1.75	250	179
Tail	Class C + 2% CaCl	250'	350'	14.8	1.36	250	294
	***Note -- the 100' fill of Tail cement shown above is assuming 250% excess over 17-1/2" gauge hole. If a 17-1/2" gauge hole was used for volume calculations, the 213 sacks of Tail cement would result in 350' of fill.						
Intermediate							
Lead	65C/35Poz +6% gel + 5% Salt	0'	1,560'	12.9	1.87	250	788
Tail	Class C	1,560'	2,160'	14.8	1.33	250	414
Production							
Lead	50/50Poz H +2% Gel	1,660'	8,918'	11.3	2.54	75	733
Tail	50/50Poz H +2% Gel	8,918'	10,000'	12.5	1.81	75	167
Production Liner							
Tail	Class C	14,280'	9,418'	15.6	1.2	45	557

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. The production casing will be cemented in a single stage
4. Production casing will have one centralizer on every other joint from TD to KOP (horizontal type) and from KOP to intermediate casing.(bowspring type).

Pilot Hole Plugging Plan:
Note: -- The 8-3/4" Pilot Hole will TD within the Wolfcamp formation at +/- 10,300' (exact depth of Pilot Hole TD will depend on geologic tops encountered while drlg). The planned lateral will also be in the Wolfcamp formation.

An open hole cemented whipstock will be utilized with 2-7/8" tail pipe. The tail 2-7/8" tail pipe will be cemented in place from the Pilot hole TD of 10,300' MD/TVD to 50' above the whipstock/KOP at 9418' MD/TVD (KOP is currentlly planned at 9418' but is subject to change after evaluating Pilot Hole logs). The pilot hole will be plugged by pumping 515 sks (35% excess) of 17.2 ppg, .97 cuft/sk yield class H cement

6. MUD PROGRAM

From	To	Type	Weight	F. Vis	Filtrate
0'	350'	Spud Mud	8.4 - 8.7	32 - 34	NC - NC
350'	2,160'	Brine	9.5 - 10.1	28 - 29	NC - NC
2,160'	10,300'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC
9,481'	10,000'	Cut Brine	9.0 - 9.8	32 - 36	15 - 25
10,000'	14,280'	Polymer Mud	10.5-13.5	45-55	6 to 8

A closed system will by utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume. When abnormal pressures are anticipated -- a pit volume totalizer (PVT), stroke counter, and flow sensor will be used to detect volume changes indicating loss or gain of circulating fluid volume.

A weighting agent and lost circulating material (LCM) will be onsite to mitigate pressure or lost circulation as hole conditions dictate.

A weighted water-based polymer mud will be utilized in the lateral section to control formation pressure

7. TESTING, LOGGING, AND CORING

The anticipated type and amount of testing, logging, and coring are as follows:

a. Drill stem tests are not planned.
b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
OH	Triple Combo	Int to Pilot TD	After Pilot TD	TBD
Mudlogs	2 man mudlog	Int Csg to TD	Drillout of Int Csg	TBD
LWD	MWD Gamma	Curve and Lateral	While Drilling	TBD

c. Core samples are not planned.
d. A Directional Survey will be run.

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

a. Higher Pressure is expected to be encountered in the Wolfcamp Shale. Estimated BHP is: 6403 psi
A weight polymer mud will be used to control the formation.
b. Hydrogen sulfide gas is not anticipated.

Chevron

Project: Eddy County NM (NAD27 NME)
Site: Cotton Hills 23-26-27 Fed Com
Well: #1H
Wellbore: OH / Job #1310733
Design: Plan #2 07-09-13
Rig: Ensign 153

PHOENIX TECHNOLOGY SERVICES

Azimuths to Grid North
True North: -0.09°
Magnetic North: 7.49°

Magnetic Field
Strength: 48233.0snT
Dip Angle: 59.86°
Date: 07/09/2013
Model: IGRF2010_14

WELL DETAILS

Ground Level: 3119.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	376299.00	554273.00	32° 2' 3.982298 N	104° 9' 29.486737 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	9418.40	0.00	0.00	9418.40	0.00	0.00	0.00	0.00	0.00		KOP Start Build 12.00
3	10172.56	90.50	179.75	9895.84	-481.63	2.10	12.00	179.75	481.63		LP Start 4107.57 hold at 10172.56 MD
4	14280.13	90.50	179.75	9860.00	-4589.00	20.00	0.00	0.00	4589.04	PBHL-CH 23-26-27 Fed #4H	TD at 14280.13

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-CH 23-26-27 Fed #4H - plan hits target center	9860.00	-4589.00	20.00	371710.00	554293.00	32° 1' 18.566254 N	104° 9' 29.340836 W	Rectangle (Sides: L20.00 W100.00)

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #1H, Grid North

Latitude: 32° 2' 3.982298 N
Longitude: 104° 9' 29.486737 W

Grid East: 554273.00
Grid North: 376299.00
Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14
Sample Date: 09-Jul-13
Magnetic Declination: 7.59°
Dip Angle from Horizontal: 59.86°
Magnetic Field Strength: 48233

To convert a Magnetic Direction to a Grid Direction, Add 7.49°
To convert a Magnetic Direction to a True Direction, Add 7.59° East
To convert a True Direction to a Grid Direction, Subtract 0.09°

PROJECT DETAILS: Eddy County NM (NAD27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

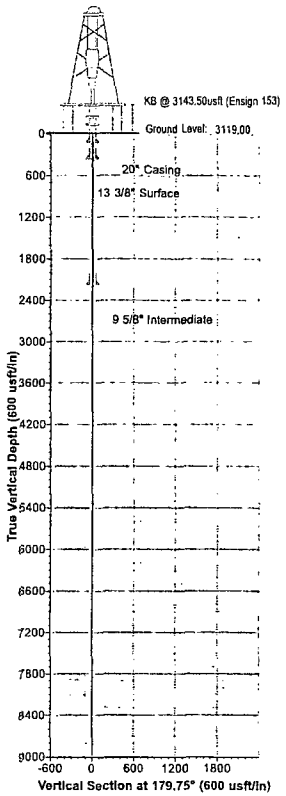
SITE DETAILS: Cotton Hills 23-26-27 Fed Com

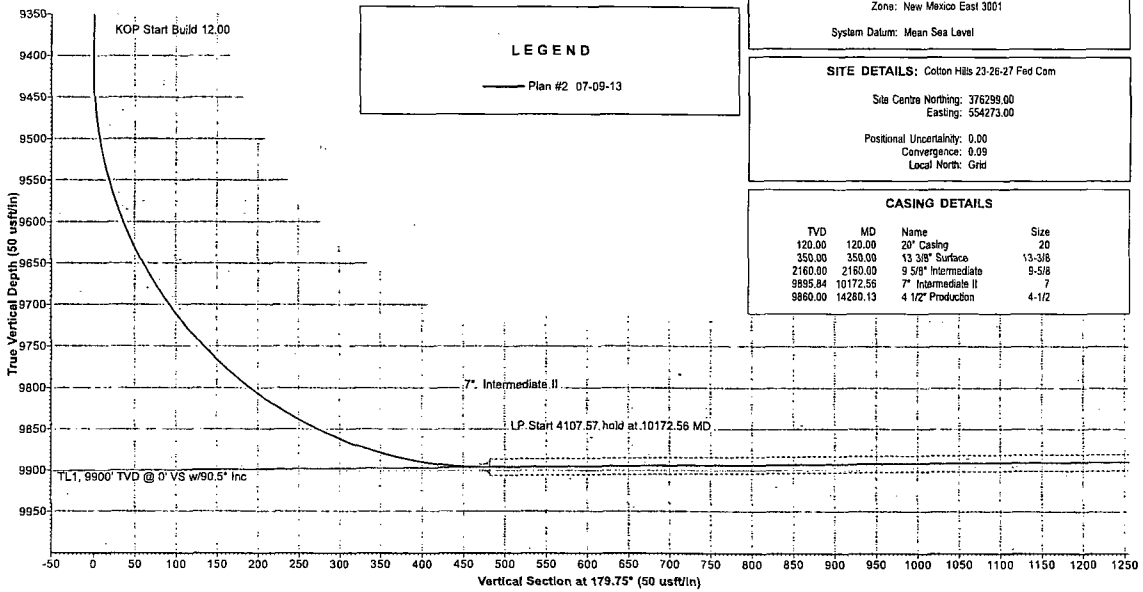
Site Centre Northing: 376299.00
Easting: 554273.00

Positional Uncertainty: 0.00
Convergence: 0.09
Local North: Grid

CASING DETAILS

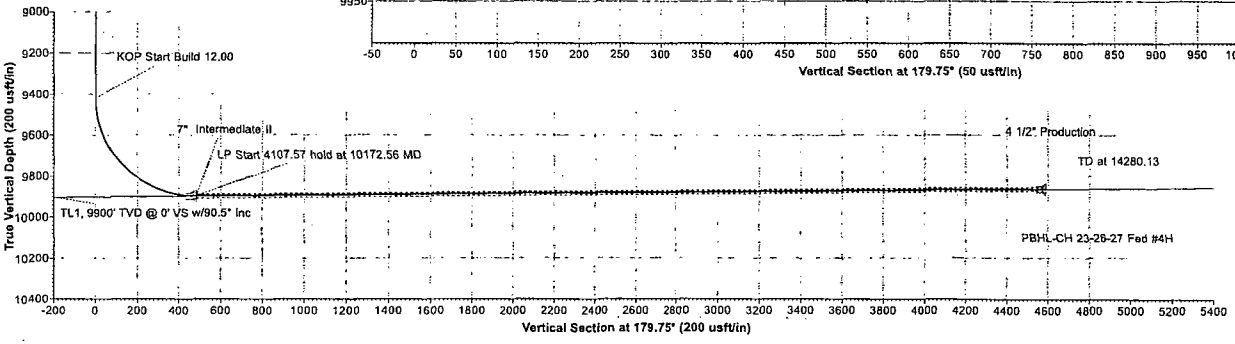
TVD	MD	Name	Size
120.00	120.00	20" Casing	20
350.00	350.00	13 3/8" Surface	13-3/8
2160.00	2160.00	9 5/8" Intermediate	9-5/8
9895.84	10172.56	7" Intermediate II	7
9860.00	14280.13	4 1/2" Production	4-1/2

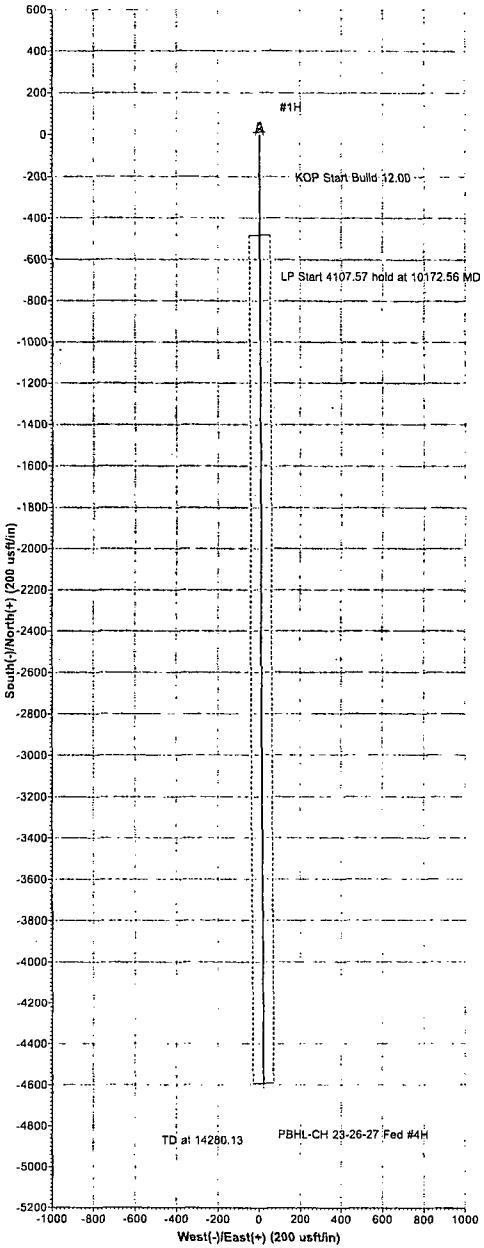




LEGEND

Plan #2 07-09-13





Created By: Julio Pina Date: 14:58, July 09 2013

Chevron

Chevron

Eddy County NM (NAD27 NME)
Cotton Hills 23-26-27 Fed Com
#1H

OH / Job #1310733

Plan: Plan #2 07-09-13

Standard Planning Report

09 July, 2013

PHOENIX
TECHNOLOGY SERVICES

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #1H
Company:	Chevron	**TVD Reference:**	KB @ 3143.50usft (Ensign 153)
Project:	Eddy County NM (NAD27 NME)	**MD Reference:**	KB @ 3143.50usft (Ensign 153)
Site:	Cotton Hills 23-26-27 Fed Com	**North Reference:**	Grid
Well:	#1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH / Job #1310733		
Design:	Plan #2 07-09-13		

Project Eddy County NM (NAD27 NME)

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Cotton Hills 23-26-27 Fed Com

Site Position:		**Northing:**	376,299.00 usft	**Latitude:**	32° 2' 3.982298 N
From:	Map	**Easting:**	554,273.00 usft	**Longitude:**	104° 9' 29.486737 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.09 °

Well #1H

Well Position	**+N/-S**	0.00 usft	**Northing:**	376,299.00 usft	**Latitude:**	32° 2' 3.982298 N
	+E/-W	0.00 usft	**Easting:**	554,273.00 usft	**Longitude:**	104° 9' 29.486737 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,119.00 usft

Wellbore OH / Job #1310733

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	07/09/13	7.59	59.86	48,233

Design Plan #2 07-09-13

Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.75

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,418.40	0.00	0.00	9,418.40	0.00	0.00	0.00	0.00	0.00	0.00	
10,172.57	90.50	179.75	9,895.85	-481.63	2.10	12.00	12.00	0.00	179.75	
14,280.13	90.50	179.75	9,860.00	-4,589.00	20.00	0.00	0.00	0.00	0.00	PBHL-CH 23-26-27 F

Database:	GCR DB	Local Co-ordinate Reference:	Well #1H
Company:	Chevron	TVD Reference:	KB @ 3143.50usft (Ensign 153)
Project:	Eddy County NM (NAD27 NME)	MD Reference:	KB @ 3143.50usft (Ensign 153)
Site:	Cotton Hills 23-26-27 Fed Com	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job #1310733		
Design:	Plan #2 07-09-13		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00
20" Casing									
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00
13 3/8" Surface									
2,160.00	0.00	0.00	2,160.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8" Intermediate									
9,418.40	0.00	0.00	9,418.40	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 12.00									
9,500.00	9.79	179.75	9,499.60	-6.96	0.03	6.96	12.00	12.00	0.00
9,600.00	21.79	179.75	9,595.65	-34.12	0.15	34.12	12.00	12.00	0.00
9,700.00	33.79	179.75	9,683.96	-80.66	0.35	80.66	12.00	12.00	0.00
9,800.00	45.79	179.75	9,760.65	-144.55	0.63	144.55	12.00	12.00	0.00
9,900.00	57.79	179.75	9,822.39	-222.98	0.97	222.98	12.00	12.00	0.00
10,000.00	69.79	179.75	9,866.47	-312.53	1.36	312.54	12.00	12.00	0.00
10,100.00	81.79	179.75	9,890.97	-409.30	1.78	409.30	12.00	12.00	0.00
10,165.80	89.69	179.75	9,895.86	-474.86	2.07	474.86	12.00	12.00	0.00
TL1 9900' TVD @ 0° VS w/90.5° Inc									
10,172.56	90.50	179.75	9,895.85	-481.62	2.10	481.63	12.00	12.00	0.00
LP Start 4107.57 hold at 10172.56 MD -7" Intermediate II									
10,200.00	90.50	179.75	9,895.61	-509.06	2.22	509.07	0.00	0.00	0.00
10,300.00	90.50	179.75	9,894.73	-609.06	2.65	609.06	0.00	0.00	0.00
10,400.00	90.50	179.75	9,893.86	-709.05	3.09	709.06	0.00	0.00	0.00
10,500.00	90.50	179.75	9,892.99	-809.05	3.53	809.05	0.00	0.00	0.00
10,600.00	90.50	179.75	9,892.12	-909.04	3.96	909.05	0.00	0.00	0.00
10,700.00	90.50	179.75	9,891.24	-1,009.04	4.40	1,009.05	0.00	0.00	0.00
10,800.00	90.50	179.75	9,890.37	-1,109.03	4.83	1,109.04	0.00	0.00	0.00
10,900.00	90.50	179.75	9,889.50	-1,209.03	5.27	1,209.04	0.00	0.00	0.00
11,000.00	90.50	179.75	9,888.62	-1,309.02	5.71	1,309.04	0.00	0.00	0.00
11,100.00	90.50	179.75	9,887.75	-1,409.02	6.14	1,409.03	0.00	0.00	0.00
11,200.00	90.50	179.75	9,886.88	-1,509.01	6.58	1,509.03	0.00	0.00	0.00
11,300.00	90.50	179.75	9,886.01	-1,609.01	7.01	1,609.02	0.00	0.00	0.00
11,400.00	90.50	179.75	9,885.13	-1,709.00	7.45	1,709.02	0.00	0.00	0.00
11,500.00	90.50	179.75	9,884.26	-1,809.00	7.88	1,809.02	0.00	0.00	0.00
11,600.00	90.50	179.75	9,883.39	-1,908.99	8.32	1,909.01	0.00	0.00	0.00
11,700.00	90.50	179.75	9,882.52	-2,008.99	8.76	2,009.01	0.00	0.00	0.00
11,800.00	90.50	179.75	9,881.64	-2,108.98	9.19	2,109.00	0.00	0.00	0.00
11,900.00	90.50	179.75	9,880.77	-2,208.98	9.63	2,209.00	0.00	0.00	0.00
12,000.00	90.50	179.75	9,879.90	-2,308.98	10.06	2,309.00	0.00	0.00	0.00
12,100.00	90.50	179.75	9,879.03	-2,408.97	10.50	2,408.99	0.00	0.00	0.00
12,200.00	90.50	179.75	9,878.15	-2,508.97	10.93	2,508.99	0.00	0.00	0.00
12,300.00	90.50	179.75	9,877.28	-2,608.96	11.37	2,608.99	0.00	0.00	0.00
12,400.00	90.50	179.75	9,876.41	-2,708.96	11.81	2,708.98	0.00	0.00	0.00
12,500.00	90.50	179.75	9,875.53	-2,808.95	12.24	2,808.98	0.00	0.00	0.00
12,600.00	90.50	179.75	9,874.66	-2,908.95	12.68	2,908.97	0.00	0.00	0.00
12,700.00	90.50	179.75	9,873.79	-3,008.94	13.11	3,008.97	0.00	0.00	0.00
12,800.00	90.50	179.75	9,872.92	-3,108.94	13.55	3,108.97	0.00	0.00	0.00
12,900.00	90.50	179.75	9,872.04	-3,208.93	13.99	3,208.96	0.00	0.00	0.00
13,000.00	90.50	179.75	9,871.17	-3,308.93	14.42	3,308.96	0.00	0.00	0.00
13,100.00	90.50	179.75	9,870.30	-3,408.92	14.86	3,408.96	0.00	0.00	0.00
13,200.00	90.50	179.75	9,869.43	-3,508.92	15.29	3,508.95	0.00	0.00	0.00
13,300.00	90.50	179.75	9,868.55	-3,608.91	15.73	3,608.95	0.00	0.00	0.00
13,400.00	90.50	179.75	9,867.68	-3,708.91	16.16	3,708.94	0.00	0.00	0.00

Database:	GCR DB	Local Co-ordinate Reference:	Well #1H
Company:	Chevron	TVD Reference:	KB @ 3143.50usft (Ensign 153)
Project:	Eddy County NM (NAD27 NME)	MD Reference:	KB @ 3143.50usft (Ensign 153)
Site:	Cotton Hills 23-26-27 Fed Com	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job #13107.33		
Design:	Plan #2 07-09-13		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,500.00	90.50	179.75	9,866.81	-3,808.90	16.60	3,808.94	0.00	0.00	0.00
13,600.00	90.50	179.75	9,865.94	-3,908.90	17.04	3,908.94	0.00	0.00	0.00
13,700.00	90.50	179.75	9,865.06	-4,008.89	17.47	4,008.93	0.00	0.00	0.00
13,800.00	90.50	179.75	9,864.19	-4,108.89	17.91	4,108.93	0.00	0.00	0.00
13,900.00	90.50	179.75	9,863.32	-4,208.88	18.34	4,208.92	0.00	0.00	0.00
14,000.00	90.50	179.75	9,862.44	-4,308.88	18.78	4,308.92	0.00	0.00	0.00
14,100.00	90.50	179.75	9,861.57	-4,408.88	19.21	4,408.92	0.00	0.00	0.00
14,200.00	90.50	179.75	9,860.70	-4,508.87	19.65	4,508.91	0.00	0.00	0.00
14,280.13	90.50	179.75	9,860.00	-4,589.00	20.00	4,589.04	0.00	0.00	0.00
TD at 14280.13 - 4 1/2" Production - PBHL-CH 23-26-27 Fed #4H									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL-CH 23-26-27 Fed - plan hits target center - Rectangle (sides W100.00 H20.00 D4,107.57)	-90.50	179.75	9,860.00	-4,589.00	20.00	371,710.00	554,293.00	32° 1' 18.566264 N	104° 9' 29.340836 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
120.00	120.00	20" Casing	20	30
350.00	350.00	13 3/8" Surface	13-3/8	17-1/2
2,160.00	2,160.00	9 5/8" Intermediate	9-5/8	12-1/4
10,172.56	9,895.85	7" Intermediate II	7	8-3/4
14,280.13	9,860.00	4 1/2" Production	4-1/2	6-1/8

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
10,165.80	9,895.86	TL1, 9900' TVD @ 0' VS w/90.5° Inc		-0.50	179.75

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
9,418.40	9,418.40	0.00	0.00	KOP Start Build 12.00
10,172.57	9,895.85	-481.63	2.10	LP Start 4107.57 hold at 10172.56 MD
14,280.13	9,860.00	-4,589.00	20.00	TD at 14280.13

BLOWOUT PREVENTOR SCHEMATIC

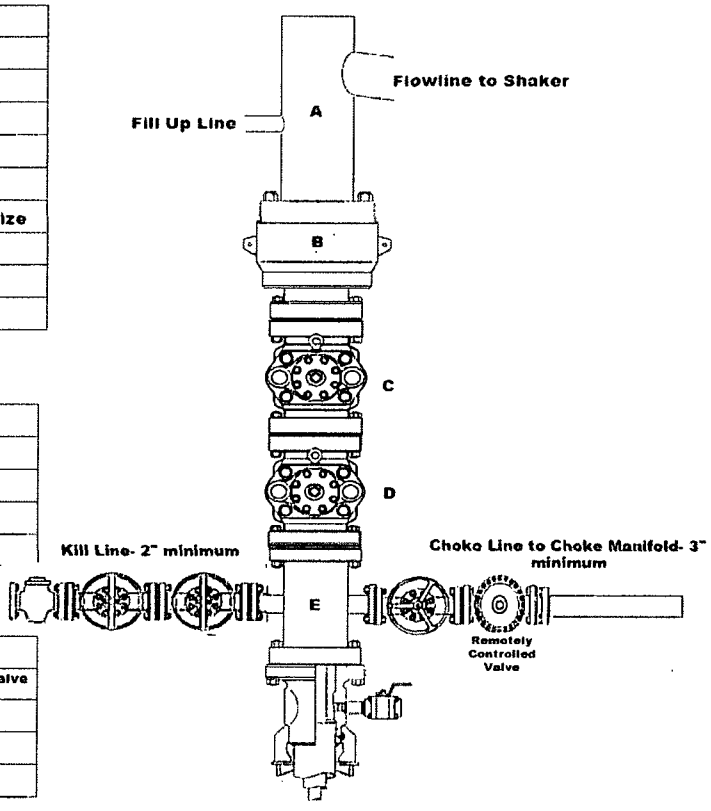
CHESAPEAKE OPERATING INC

Minimum Requirements

OPERATION : Intermediate and Production Hole Sections

Minimum System Pressure Rating : **5,000 psi**

	SIZE	PRESSURE	DESCRIPTION
A		N/A	Bell Nipple
B	13 5/8"	5,000 psi	Annular
C	13 5/8"	5,000 psi	Pipe Ram
D	13 5/8"	5,000 psi	Blind Ram
E	13 5/8"	5,000 psi	Mud Cross
F			
DSA		As required for each hole size	
C-Sec			
B-Sec		13-5/8" 5K x 11" 5K	
A-Sec		13-3/8" SOW x 13-5/8" 5K	



Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	5,000 psi	Gate Valve
2"	5,000 psi	Gate Valve
2"	5,000 psi	Check Valve

Choke Line

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Gate Valve
3"	5,000 psi	Remotely Controlled Valve

Installation Checklist

The following item must be verified and checked off prior to pressure testing of BOP equipment.

- ☐ The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- ☐ All valves on the kill line and choke line will be full opening and will allow straight though flow.
- ☐ The kill line and choke line will be straight unless turns use tee blocks or are targeted with running tess, and will be anchored to prevent whip and reduce vibration.
- ☐ Manual (hand wheels) or automatic locking devices will be installed on all ram preventers. Hand wheels will also be installed on all manual valves on the choke line and kill line.
- ☐ A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will remain open unless accumulator is inoperative.
- ☐ Upper kelly cock valve with handle will be available on rig floor along with safety valve and subs to fit all drill string connections in use.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer

Wellname: _____

CHK Representative: _____

Date: _____

CHOKE MANIFOLD SCHEMATIC

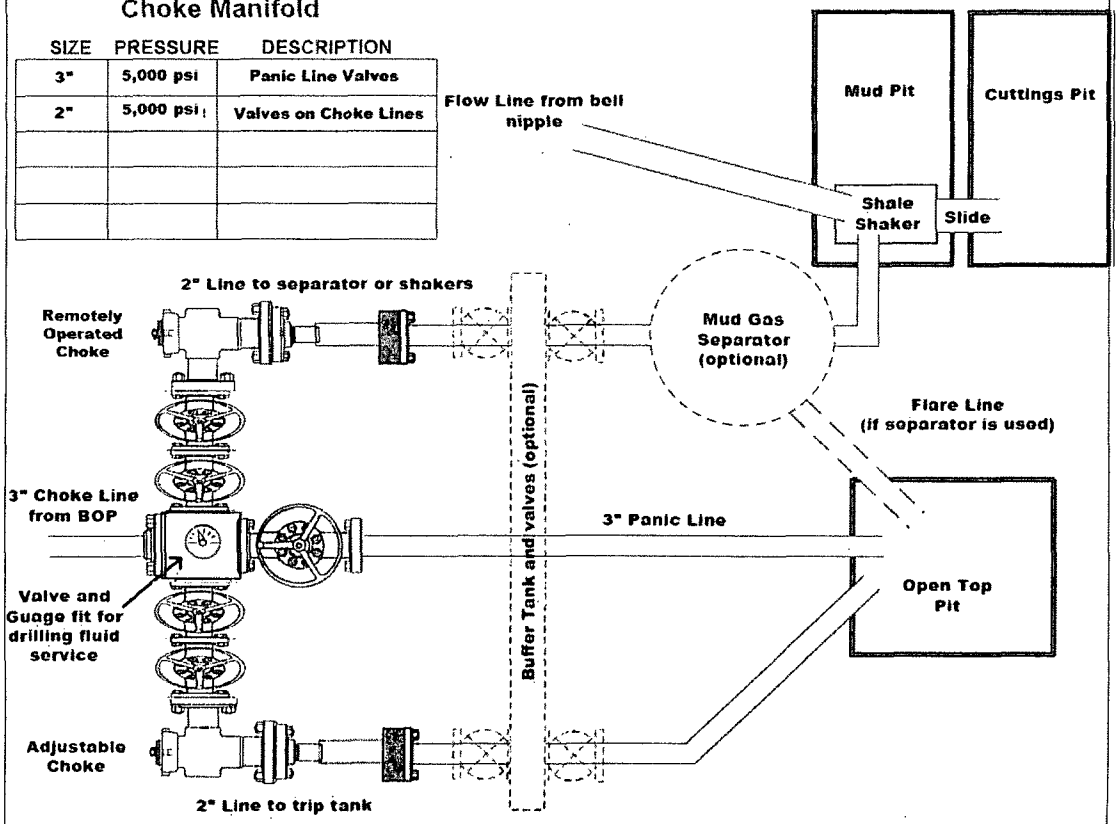
CHESAPEAKE OPERATING INC
Minimum Requirements

OPERATION : Intermediate and Production Hole Sections

Minimum System Pressure Rating : **5,000 psi**

Choke Manifold

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Panic Line Valves
2"	5,000 psi	Valves on Choke Lines



Installation Checklist

The following item must be verified and checked off prior to pressure testing of BOP equipment.

- ☐ The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- ☐ Adjustable Chokes may be Remotely Operated but will have backup hand pump for hydraulic actuation in case of loss of rig air pressure or power.
- ☐ Flare and Panic lines will terminate a minimum of 150' from the wellhead. These lines will terminate at a location as per approved APD.
- ☐ The choke line, kill line, and choke manifold lines will be straight unless turns use tee blocks or are targeted with running tess, and will be anchored to prevent whip and reduce vibration. This excludes the line between mud gas separator and shale shaker.
- ☐ All valves (except chokes) on choke line, kill line, and choke manifold will be full opening and will allow straight through flow. This excludes any valves between mud gas separator and shale shakers.
- ☐ All manual valves will have hand wheels installed.
- ☐ If used, flare system will have effective method for ignition
- ☐ All connections will be flanged, welded, or clamped (no threaded connections like hammer unions)
- ☐ If buffer tank is used, a valve will be used on all lines at any entry or exit point to or from the buffer tank.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer

Wellname: _____

CHK Representative: _____

Date: _____

BOPE Testing

CHESAPEAKE OPERATING INC
Minimum Requirements

Closing Unit and Accumulator Checklist

The following item must be performed, verified, and checked off at least once per well prior to low/high pressure testing of BOP equipment. This must be repeated after 6 months on the same well.

☐ **Precharge pressure for each accumulator bottle must fall within the range below. Bottles may be further charged with nitrogen gas only. Tested precharge pressures must be recorded for each individual bottle and kept on location through the end of the well. Test will be conducted prior to connecting unit to BOP stack.**

Check one that applies	Accumulator working pressure rating	Minimum acceptable operating pressure	Desired precharge pressure	Maximum acceptable precharge pressure	Minimum acceptable precharge pressure
☐	1500 psi	1500 psi	750 psi	800 psi	700 psi
☐	2000 psi	2000 psi	1000 psi	1100 psi	900 psi
☐	3000 psi	3000 psi	1000 psi	1100 psi	900 psi

☐ **Accumulator will have sufficient capacity to open the hydraulically-controlled choke line valve (if used), close all rams, close the annular preventer, and retain a minimum of 200 psi above the maximum acceptable precharge pressure (see table above) on the closing manifold without the use of the closing pumps. This test will be performed with test pressure recorded and kept on location through the end of the well**

☐ **Accumulator fluid reservoir will be double the usable fluid volume of the accumulator system capacity. Fluid level will be maintained at manufacturer's recommendations. Usable fluid volume will be recorded. Reservior capacity will be recorded. Reservoir fluid level will be recorded along with manufacturer's recommendation. All will be kept on location through the end of the well.**

☐ **Closing unit system will have two independent power sources (not counting accumulator bottles) to close the preventers.**

☐ **Power for the closing unit pumps will be available to the unit at all times so that the pumps will automatically start when the closing valve manifold pressure decreases to the pre-set level. It is recommended to check that air line to accumulator pump is "ON" during each tour change.**

☐ **With accumulator bottles isolated, closing unit will be capable of opening the hydraulically-operated choke line valve (if used) plus close the annular preventer on the smallest size drill pipe within 2 minutes and obtain a minimum of 200 psi above maximum acceptable precharge pressure (see table above) on the closing manifold. Test pressure and closing time will be recorded and kept on location through the end of the well.**

☐ **Master controls for the BOPE system will be located at the accumulator and will be capable of opening and closing all preventer and the choke line valve (if used)**

☐ **Remote controls for the BOPE system will be readily accessible (clear path) to the driller and located on the rig floor (not in the dog house). Remote controls will be capable of closing all preventers.**

☐ **Record accumulator tests in drilling reports and IADC sheet**

BOPE Test Checklist

The following item must be ckecked off prior to beginning test

☐ **BLM will be given at least 4 hour notice prior to beginning BOPE testing**

☐ **Valve on casing head below test plug will be open**

☐ **Test will be performed using clear water.**

The following item must be performed during the BOPE testing and then checked off

☐ **BOPE will be pressure tested when initially installed, whenever any seal subject to test pressure is broken, following related repairs, and at a minimum of 30 days intervals. Test pressure and times will be recorded by a 3rd party on a test chart and kept on location through the end of the well.**

☐ **Test plug will be used**

☐ **Ram type preventer and all related well control equipment will be tested to 250 psi (low) and 5,000 psi (high).**

☐ **Annular type preventer will be tested to 250 psi (low) and 3,500 psi (high).**

☐ **Valves will be tested from the working pressure side with all down stream valves open. The check valve will be held open to test the kill line valve(s)**

☐ **Each pressure test will be held for 10 minutes with no allowable leak off.**

☐ **Master controls and remote controls to the closing unit (accumulator) must be function tested as part of the BOP testing**

☐ **Record BOP tests and pressures in drilling reports and IADC sheet**

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer along with any/all BOP and accumulator test charts and reports from 3rd parties.

Wellname: _____

CHK Representative: _____

Date: _____

Closed Loop System

COTTON HILLS 23 26 27 FED COM. 1H
Unit B, Sec. 23, T-26-S R-27-E
Eddy, Co., NM
API# 30-015-

Plans are to use a closed loop system with roll off bins in the drilling of this well. Operator will maintain all liquids and solids within the closed loop system in a safe manner in order to protect public health and the environment.

Operations and Maintenance:

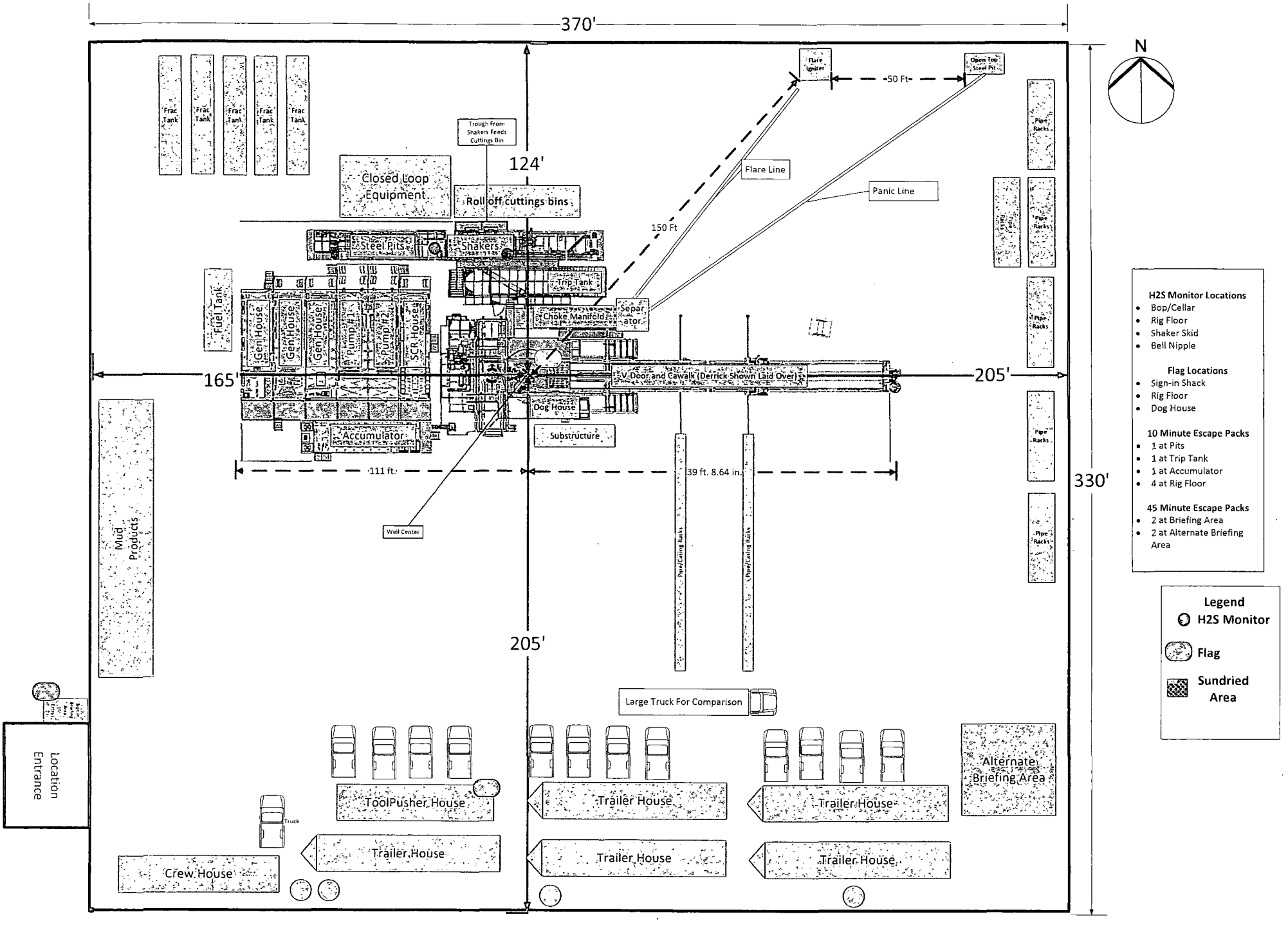
During each tour, the rig's crew will inspect and monitor the drilling fluids contained within the tank and monitor any spill which may occur. Should a spill, release or leak occur; the NMOCD District II office in Artesia (575.748.1283) will be notified. Please note that notifications may be made earlier to the district office should a greater release occur in compliance with NMOCD's rules.

Closure:

During and after drilling operations, any fluids and solids will be transported to Controlled Recovery, Inc. Permit # NM-01-0006.

The alternative disposal facility will be at Sundance Disposal. Permit # NM-01-0003.

Cotton Hills 23-26-27 Fed Com 1H Pad Layout (330' x 370')



H2S Monitor Locations
- Bop/Cellar
- Rig Floor
- Shaker Skid
- Bell Nipple

Flag Locations
- Sign-in Shack
- Rig Floor
- Dog House

10 Minute Escape Packs
- 1 at Pits
- 1 at Trip Tank
- 1 at Accumulator
- 4 at Rig Floor

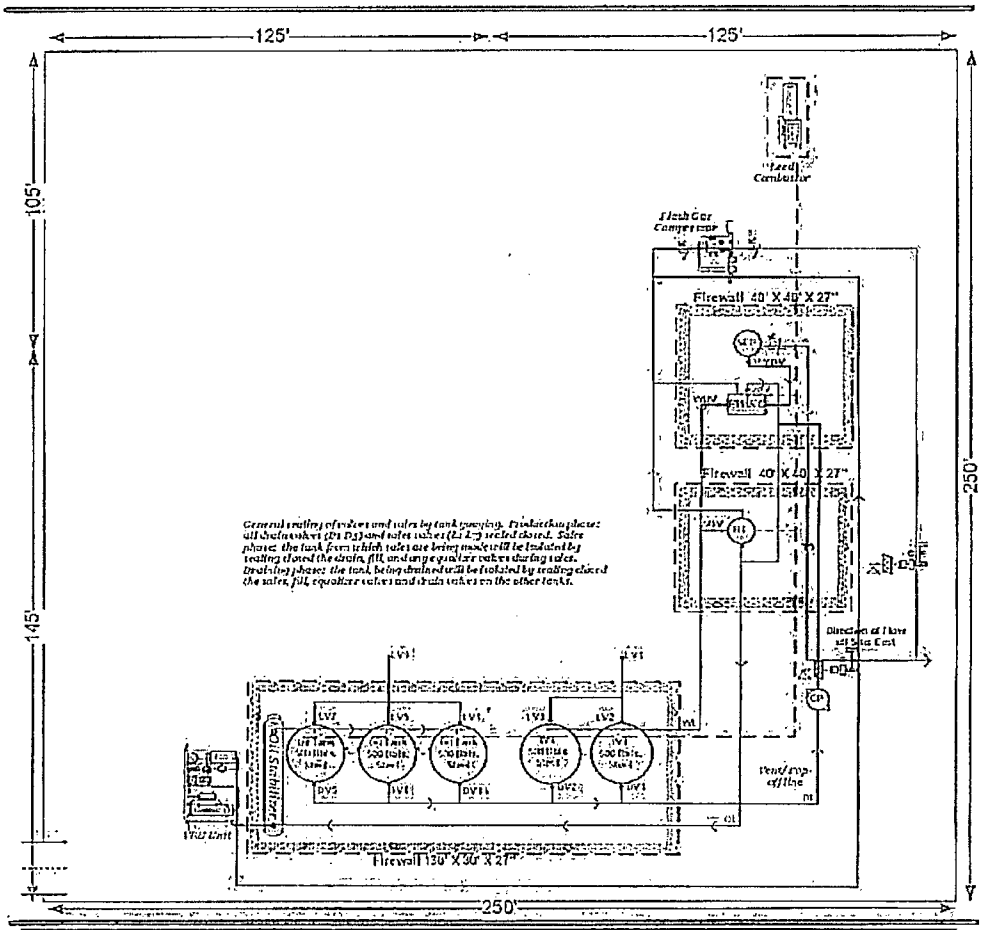
45 Minute Escape Packs
- 2 at Briefing Area
- 2 at Alternate Briefing Area

Legend
- H2S Monitor
- Flag
- Sundried Area

Chesapeake ENERGY

Cotton Hills 23 26 27
Facility Pad
S23/T26S/R27E - 152' FNL & 399' FEL
Eddy County, NM

N
W E
S

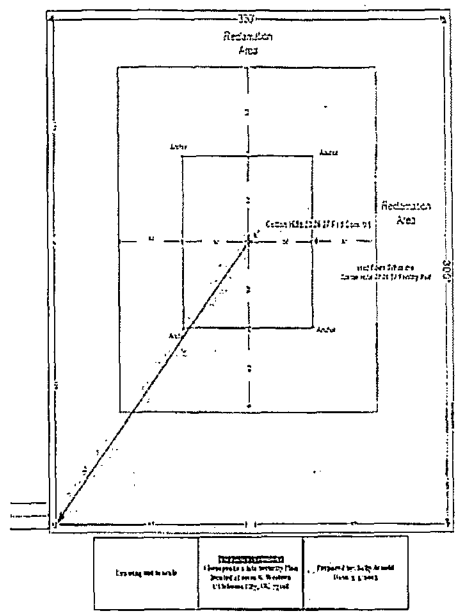


Prepared by: Sally Arnold *Date: 3/5/2013*	*This lease is subject to Chesapeake's Site Security Plan located at 6100 N. Western Oklahoma City, OK 73118*	*All equipment shown will be on location, but subject to changes in positioning*

Cotton Hills 23 26 27 Fed Com 1H

Chesapeake

Property Number: 640420
Section 23 – T26S – R27E
Lat: 32.03444 – Long: 104.15519
Eddy County, New Mexico



Gas Meter Run (GM)
Fill Line Valve
Draw off Valve
Load Line Valve
Equalizer Valve
Other Valve
Separator (S)
Heater Treater (HT)
Tanks and Labels
Well Head
Production Unit
Pumping Unit
Lease Road
BLM Site Security Statement
Compressor

Steam Generation Facility (SGF)
Gun Barrel or Wash tank (GB)
Pit/number of pits (1)
Automated Custody Transfer Unit (LACT)
Connection Piping (PL); Truck Loading (TL)
Check Valve (CK)
Pumps: Circulating (CP); Transfer (TP)
Free Wtr Knockout (FWKO)
Line Heater (LH)
Header (HD)
Firewall Section
Directional Flow off Site: N S E W; NE NW SE SW

Item	Line Symbol	
Fill line	—F—	F
Test line	—T—	T
Equalizer/overflow line	—O—	
Sales line	—S—	S
Circulating lines: tank - C; pit - PC	—CCP—	C CP
Drain line: tank - D; prod vessel - PD	—DPD—	D PD
Tank vent line	—V—	V
Gas line	—G—	G
Water line	—W—	W
End of line (LACT)	—B—	B
Safety valve vent line	—SV—	SV
Misc. access line; royalty oil; lease use	—M—	M
Heating lines; contents - O; other media - H	—OH—	O H
Fuel line - U; power oil - PO	—U—	U
Water disposal line	—WD—	WD
Lines: not connected		
Lines: connected		
Gas oil line	—R—	R
Portable well tester outlets	PT	
Direction of Flow		

ONSHORE OIL & GAS ORDER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

1. EXISTING ROADS/LEASE ROADS

Driving directions are from Malaga, NM. North on HWY 285 11.5 miles. West on Whites City Rd, 6 miles. South on CR 775 2.5 miles. The location is 20 miles from the nearest town, which is Malaga, NM.

The proposed lease road 2406' in length and 14' in travel way width with a maximum disturbance area of 30' will be used, and in accordance with guidelines set forth in the BLM Onshore Orders. No turnouts are expected.

Existing county roads will be used to enter proposed access road.

Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.

Location, access, and vicinity plats attached hereto. **See Exhibits A-1 to A-4.**

2. NEW OR RECONSTRUCTED ACCESS ROADS

There will be approximately 2406' of new access to be constructed.

The new access road will be upgraded to a crowned and ditched road and will be graveled as needed for drilling. If requested by the surface owner, upgrading of this portion of the road will be kept to a minimum.

All existing roads (previously improved) will be used "as is" with the exception of minor blading as needed.

Surface disturbance and vehicular travel will be limited to the approved access route. Any additional area will be approved in advance.

Road Width: 14 – 20 feet traveling surface.

Maximum Grade: Road gradient less than 8%

Crown Design: 2%

Turnouts will be installed along the access route as needed.

Ditch design: Drainage, interception and outlet.

Erosion Control: 6" rock under road.

Re-vegetation of Disturbed Area: All disturbed areas will be seeded by Broadcast or Drill and Crimp. Ground conditions will determine the method used.

Cattle guard(s) will be installed as needed.

Major Cuts and Fills: 2:1 Slope.

Surfacing material (road base derived from caliche or river rock) will be placed on the access road during construction. All surface disturbing activities will be discussed with and agreed to with the surface owner.

3. LOCATION OF EXISTING WELLS

All wells located within a 1-mile radius of the proposed location. **See Exhibit B.**

4. LOCATION OF PRODUCTION FACILITIES

It is anticipated that production facilities will be located on the East side of the COTTON HILLS 23-26-27 1H well pad and oil to be sold at that tank battery.

The production line will be buried 3 1/2" Fiberglass Pipe with a working pressure greater than 100 psi ran along existing disturbances.

Oil and gas measurement will be installed on this well location. **See Exhibits C.**

5. LOCATION AND TYPES OF WATER SUPPLY

Water will be obtained from a private water source.

Chesapeake will utilize the frac pond in section 2-26-27 for fresh water.

Water to be hauled into section 2.

A temporary 10" aluminum transfer line will run approx. 4 miles from the pond in section 2 to the location. All transfer lines will be laid on a disturbed area.

Ditch design: Drainage, interception and outlet.

Erosion Control: 6" rock under road.

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Cattle guard(s) will be installed as needed.

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6. CONSTRUCTION MATERIALS

All construction materials will be used from nearest BLM, State, or Private Pit. All material (i.e. shale) will be acquired from private or commercial sources.

No construction material will be needed for well pad construction; subsurface spoil material will be utilized.

Surfacing material (caliche) will be purchased from a supplier having a permitted source of materials.

The entire location will be fenced with barb/woven wire and bermed with spoil dirt or gravel.

7. METHODS FOR HANDLING WASTE DISPOSAL

A closed system will be utilized consisting of above ground steel tanks.

All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in a state approved facility.

Disposal of cuttings:

8. ANCILLARY FACILITIES

None

9. WELLSITE LAYOUT

The proposed site layout plat is attached showing the Patterson Rig #62 orientation and equipment location. **See Exhibit D.**

In order to level the location, cut and fill will be required. Please see attached Well Location and Acreage Dedication Plat – Exhibits A-1 to A-4.

A locking gate will be installed at the site entrance.

Any fences cut will be repaired. Cattle guards will be installed, if needed.

10. PLANS FOR RECLAMATION OF THE SURFACE

In the Event of Production

Interim reclamation will consist of reclaiming the pad to 50 feet outside the anchors or approximately 200 x 200 feet.

In the Event of a Dry Hole/Final Reclamation

Upon final abandonment of the well, caliche material from the well pad and access road will be removed and utilized to re-contour to a final contour that blends with the surrounding topography as much as possible. Any caliche material not used will be utilized to repair roads within the lease. Topsoil will be distributed over the reclamation area and cross ripped to control erosion; the site will be seeded with an approved BLM mixture.

The location will be restored to as near as original condition as possible. Reclamation of the surface shall be done in strict compliance with the existing New Mexico Oil Conservation Division regulations and BLM regulations.

11. GRAZING TENANT

Philip and Kendra Stell
1305 Janway
Carlsbad, NM 88220

ROAD OWNERSHIP

All access roads are located on public lands.

CHESAPEAKE OPERATING, INC. HAS AN AGREEMENT WITH THE SURFACE OWNER, AND WILL MAKE A GOOD FAITH EFFORT TO PROVIDE THE SURFACE USE PLAN OF OPERATION TO THE SURFACE OWNER.

12. ADDITIONAL INFORMATION

Class III cultural resource inventory report was prepared by Boone Archaeological Services, Carlsbad, New Mexico for the proposed location. A copy of the report has been sent to the BLM office under separate cover and is also attached for reference.

13. CHESAPEAKE REPRESENTATIVES

Drilling and Completion Operations

District Manager
Jay Stratton
P.O. Box 18496
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405-831-3994 (Cell)
jay.stratton@chk.com

Drilling Engineer
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Oklahoma City, OK 73154
405-935-4346 (Office)
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Field Representative
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Starr@chevron.com

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405-849-2896 (Fax)
carol.adler@chk.com

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CHESAPEAKE OPERATING
LEASE NO.:	NM117116
WELL NAME & NO.:	1H-COTTON HILLS 23 26 27 FED COM
SURFACE HOLE FOOTAGE:	152' FNL & 1979' FEL
BOTTOM HOLE FOOTAGE	560' FSL & 1979' FSL
LOCATION:	Section 23, T. 26 S., R 27 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Communitization Agreement
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For

examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

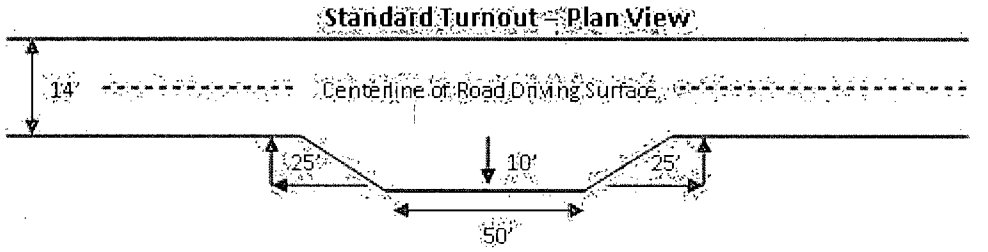
Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

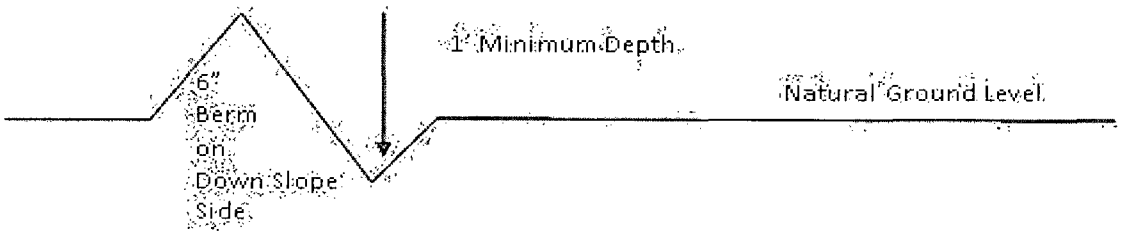


Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

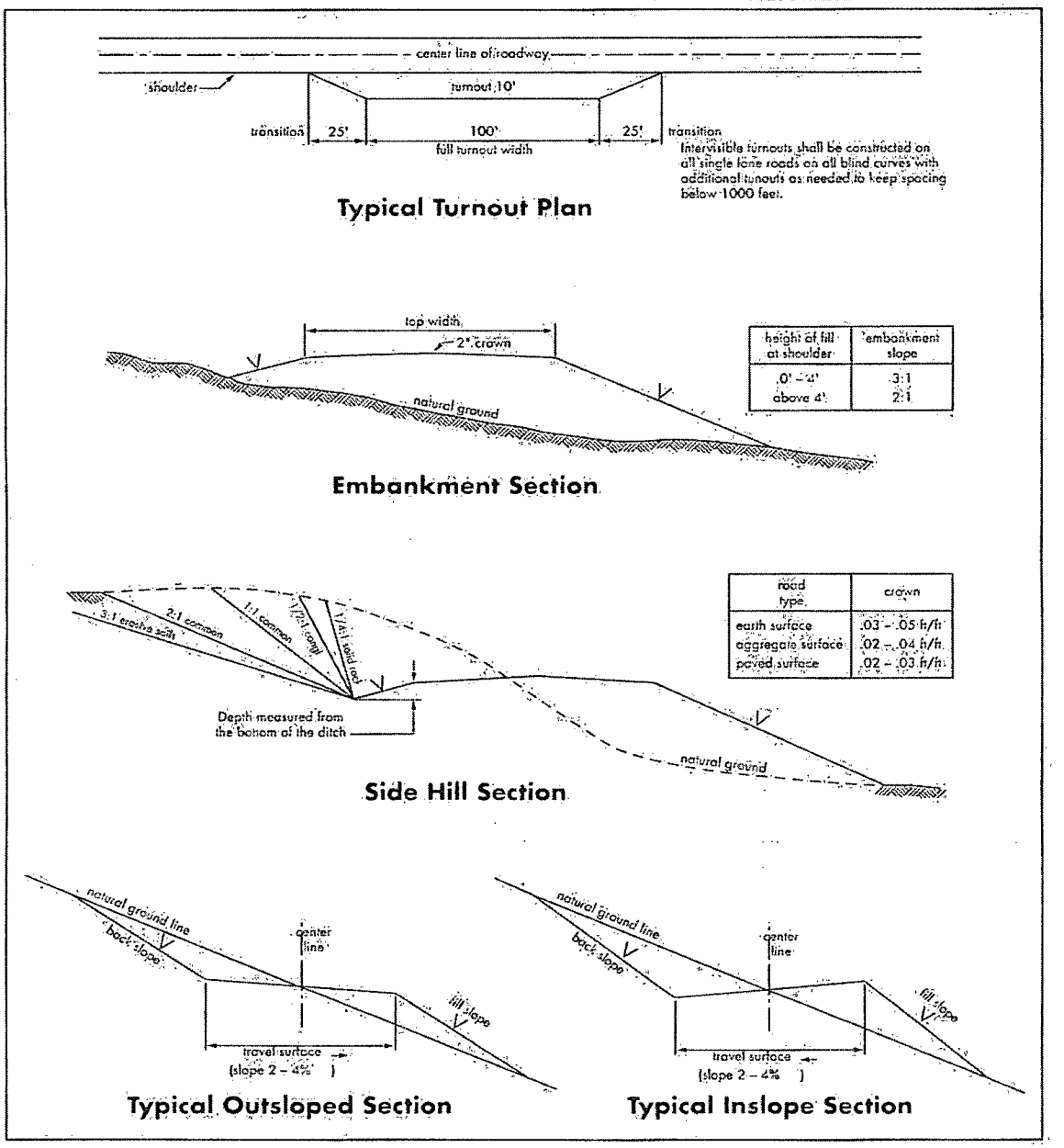
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst
Possible water flows in the Salado.
Possible lost circulation in the Delaware.
Possible high pressure in the Wolfcamp formation.

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Formation below the 13-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

The pilot hole plugging procedure is approved as written.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

3. The minimum required fill of cement behind the **7** inch production casing is:

☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

Formation below the 7" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:

☒ Cement should tie-back to the top of the liner. Operator shall provide method of verification.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.

    d. The results of the test shall be reported to the appropriate BLM office.

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

F. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

CRW 070913

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

VRM Facility Requirement
Low-profile tanks not greater than eight-feet-high shall be used.

B. PIPELINES

The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	(X) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or

other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 4, for Gypsum Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Alkali Sacaton (Sporobolus airoides)	1.0
DWS Four-wing saltbush (Atriplex canescens)	5.0

DWS: DeWinged Seed

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed